Demonstration of National Capability for Digital Datalink for Graphical Display of Weather Information

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Relevant Milestone: Weather Accident Prevention Project Milestone: National AWIN Datalink Capability (scheduled for completion 4Q02)

Shown: Honeywell VDL Mode 2 ground station; ARNAV VHF Gaussian Mean Shift Keying (GMSK) datalink technologies installed on a Cessna 180 for flight evaluation.

Accomplishment / Relation to Milestone: Near-term digital communications technologies were developed and used to demonstrate in-flight the dissemination of graphical weather information to aircraft cockpit displays under NASA Cooperative Research Agreements (CRA's). Flight demonstrations included the following: Honeywell-developed broadcast-only VDL Mode 2 ground stations and airborne receivers for General Aviation (GA) aircraft were evaluated in flight and used to support the Convective Weather Sources experiment on the NASA LaRC B200 King Air aircraft. Weather information flight experiments on a Cessna 180 conducted by ARNAV included the evaluation of 2-way VHF GMSK datalink technologies. Selection by the FAA of both Honeywell and ARNAV to implement the FAA's Flight Information Services (FIS) Datalink Policy provides strong endorsement of the underlying technologies developed under these NASA CRA's. In-Service Evaluations of the Honeywell Weather Information Network transport system, performed by United Airlines, included the first approved use of true Internet Protocol (IP) to a FAR 121 flight deck via sky phone technology. The sky phone system, commonly found on commercial transport aircraft for passenger telephony, was used with a dial up modem to provide low data rate digital transfer of graphical weather information. Overall, collaboration between NASA and industry through CRA's resulted in the TRL for digital communications technologies to reach the target of 6 a year earlier than originally planned, allowing for early completion of the Project-level milestone.

Future Plans: Continue Cooperative Research Agreements and in-house research, with focus on the development of technologies required to enable next-generation digital communications technologies, with initial evaluation by 3rd Quarter FY 2003 and final demonstration in 3rd Quarter FY 2005.

Aviation Safety Program
National AWIN Datalink Capability

Honeywell VDL Mode 2 Ground Station (Charlottesville, VA)

a

b

ARNAV VHF GMSK Datalink Technologies installed on a Cessna 180 for flight evaluation: a) antenna; b) transmitter